

Appendix B

Mercury Significance Test

Background

The Pend Oreille River is considered a high quality water for recreational uses. To prevent the lowering of water quality with respect to mercury, DEQ must ensure that the design flow increase proposed by the Sandpoint WWTP draft permit does not decrease the remaining assimilative capacity of the river by more than ten percent to be considered insignificant degradation (IDAPA 58.01.02.052.08.a).

Assimilative capacity is determined by comparing the background (ambient) concentration of a pollutant with the Water Quality Standard (WQS). The difference between these two numbers is the remaining assimilative capacity. A ten percent or less decrease of the remaining assimilative capacity is considered to be insignificant degradation.

A detailed discussion of mercury is presented in Appendix F of the Fact Sheet. Please refer to this Appendix for an explanation of the values selected in this analysis.

Analysis

- Background mercury concentration upstream of Sandpoint discharge (see Fact Sheet Appendix F): $0.003\mu\text{g/L}$
- Maximum in-stream phosphorus concentration at edge of mixing zone (see Fact Sheet Appendix F and Quality Criteria for Water 1986, EPA): $0.012\mu\text{g/L}$
- Remaining assimilative capacity: $0.012\mu\text{g/L} - 0.003\mu\text{g/L} = 0.009\mu\text{g/L}$
- Ten percent of $0.009\mu\text{g/L}$ is: $0.0009\mu\text{g/L}$ This is the amount of mercury that can be added to the river before the amount becomes significant.
- Sandpoint proposes to increase their current design flow from 3 mgd (4.64 cfs) to 3.62 mgd (5.6 cfs).
- Effluent concentration (from draft permit average monthly limit): $0.361\mu\text{g/L}$
- In-river 7Q10 flow (critical low flow for chronic aquatic life criteria; see Fact Sheet Part III and Appendix C) = 3,880 cfs

Results

Current Mixed Concentration = $0.0034\mu\text{g/L}$

Proposed Mixed Concentration = $0.0035\mu\text{g/L}$

$0.0035 - 0.0034 = 0.0001\mu\text{g/L}$ is the reduction in assimilative capacity from the current design flow to the proposed design flow. This proposed increase of mercury does not exceed 10% of the remaining assimilative capacity and therefore, is not a significant degradation of river water quality.